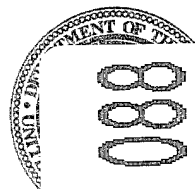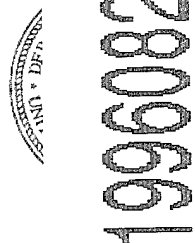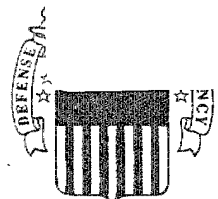# Technical Raster Transfer

using:

Cubic Defense Systems' Data

MIL-R-28002A (Raster)

Quick Short Test Report

18 September 1993

Prepared for

Electronic Systems Center

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Technical Raster Transfer

Using:

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Quick Short Test Report

18 September 1993

Prepared By
Air Force CALS Test Bed
Wright-Patterson AFB, OH 45433

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Air Force Air Force CALS Test Network (AFCTN).

Contents

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-Cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Cubic Defense System's interpretation and use of the CALS standards, in transferring technical Raster data. Cubic Defense Systems used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.

2. Test Parameters

Test Plan: AFCTB 93-089

**Date of
Evaluation:**   18 September 1993

Evaluator: George Elwood
                                   Air Force CALS Test Bed
                                   DET 2 HQ ESC/ENCP
                                   4027 Colonel Glenn Hwy
                                   Suite 300
                                   Dayton OH 45431-1672

**Data
Originator:**   John Akin
                                   Cubic Defense Systems
                                   9333 Balboa Avenue
                                   San Diego CA 92186-5587
                                   (619) 277-6780 X 2785

**Data
Description:**   Technical Raster Test
                                         3 Document Declaration files
                                         14 Raster files

**Data
Source System:**
                 1840
                          HARDWARE

                                   Unknown
                          SOFTWARE
                                   Unknown

                 Raster
                          HARDWARE
                                   Unknown
                          SOFTWARE
                                   Unknown

Evaluation Tools Used:

> **MIL-STD-1840A (TAPE)**
>> SUN 3/280
>>> AFCTN *Tapetool v1.2.10 UNIX*
>>> XSoft *CAPS/CALS v40.4*
>> PC 486/50
>>> AFCTN *Tapetool v1.2.10 DOS*
>
> **MIL-R-28002 (Raster)**
>> SUN SparcStation 2
>>> ArborText *g42tiff*
>>> Carberry *CADLeaf Plus v3.1*
>>> AFCTN *validg4*
>>> AFCTN *calstb.475*
>>> AFCTN *xrastb.sun4*
>>> IGES Data Analysis (IDA) *IGESView v3.0*
>>> Island Graphics *IslandPaint v3.0*
>> PC 486/50
>>> IDA *IGESView Windows*
>>> Inset Systems *HiJaak Window v1.0*

**Standards
Tested:**

> MIL-STD-1840A
> MIL-R-28002A

3.   1840A Analysis

3.1   External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) en-
closed in a box in accordance with ASTM D 3951. The exte-
rior of the box was marked with a magnetic tape warning
label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in barrier sheet material as required
by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape
reel showed the label indicating the recording density, as
required by MIL-STD-1840A, para. 5.3.1. Enclosed in the box
was a packing list showing all files recorded on the tape.

3.2 . Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-
1840A files. The files were named per the standard conven-
tions.

3.2.1   Tape Formats

The tape was run through the AFCTN *Tapetool v1.2.10* utility.
No errors were encountered while evaluating the contents of
the tape labels.

A note was reported on the tape label version. MIL-STD-
1840A permits the use of both version three and four. The
use of the most current standard should be used and noted.

The tape was read using the XSoft *CAPS read1840A* utility.
Because of errors in the Raster header files, XSoft's tool
quit reading the tape after the first reported error.

3.2.2 Declaration and Header Fields

No errors were found in the Document Declaration file. The
CALS data file headers in the first two documents were bad.
What appears to be stray characters were inserted into the
header which caused several software tools to report errors.
File D003R001 was correct. Shown below is the header file
from D001R001. The headers varied between files but this is
typical of the results.

```
srcdocid: NONE
figid: θJ åkæßF├O
srcgph: NONE
doccls: NONE
∩ϕ∩ ù█  ╪█σ┘ú ┘+˜δ╬┼Δ┴╚σ&│▢▢↓ ╘î  =▐r[» ╜mŨŨΔ åδ┌ Ñ▄] ?╬   ¡┤█▌δ╜
rorient: NONE
rdensty: NONE
notes: NONE
```

Because of errors in the Raster header files, this portion
of the tape does not meet the CALS MIL-STD-1840A require-
ments.

4. IGES Analysis

The tape contained no Initial Graphics Exchange Specific--
tion (IGES) files.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were
included on this tape.

6. Raster Analysis

The tape contained 14 Raster files. All files were evaluated using the AFCTN *validg4* utility. This program reported all files, except D003R001, do not meet the CALS MIL-R28002A specification. This utility reported the errors in the CALS headers.

The files were read into the AFCTN *xrastb.sun4* viewing utility. All files, except D003R001, could not be viewed. This utility read the data in the CALS header and would not process the files because of missing data. File D003R001 could be read and viewed without a problem.

The AFCTB has several tools for viewing Raster files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The files were converted using ArborText's *g42tiff* utility without a reported error. The resulting files were read into Island Graphics' *IslandPaint* and displayed.

The Raster files were read into Carberry's *CADLeaf* software. This software reported errors in all files except D003R001. However, the software was able to read and display the images on the screen.

The files were read into IDA's *IGESView*. This software was able to read, display, and print the files. All files, except D003R001, were reported as having an error. *IGESView for Windows* read and displayed the files without a reported error.

All files, except D003R001, could not be read into Inset Systems' *HiJaak for Windows*. This software program reported that the files were invalid files of a different flavor.

Only file D003R001 could be converted using Rosetta Technologies' *Prepare* without a reported error. All of the

other files were reported as being in error and would not process. The resulting file from D003R001 was read into *Preview*, displayed, and printed.

The Raster files do not meet the CALS MIL-R-28002A specification because of errors in the header files. Software that looked at this data would not process the files.

7. CGM Analysis

The tape contained no Computer Graphices Metafile (CGM) files.

8. Conclusions and Recommendations

The tape from Cubic Defense Systems had no reported errors in physical structure. The header files of all but one of the Raster files contained bad data which prevented the files from passing the validation process. This portion of the tape does not meet the CALS MIL-STD-1840A requirements.

The errors with the Raster images are serious. The CALS header contained invalid data which caused several of the tools, available in the AFCTB, not to process the files. Software tools that do not check the CALS headers were able to read and display the files. All of Raster files, except D003R001, do not meet the CALS MIL-R-28002A specification.

The tape submitted by Cubic Defense Systems does not meet the CALS MIL-STD-1840A requirements.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

Air Force CALS Test Network Catalog Evaluation - Version 1.2; Release 10 (C)

  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information
    ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
                    for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Sat Sep 18 10:10:17 1993

MIL-STD-1840A File Catalog

File Set Directory: /cals/u1210/Set017

Page:
1

File Name Extracted	File Type	Record Format/ Selected/ Length	Block Length/Total
D001 Extracted	Document Declaration	D/00260	02048/000001
D002 Extracted	Document Declaration	D/00260	02048/000001
D003 Extracted	Document Declaration	D/00260	02048/000001
D001R001 Extracted	Raster	F/00128	02048/000010
D001R002 Extracted	Raster	F/00128	02048/000003
D001R003 Extracted	Raster	F/00128	02048/000005
D001R004 Extracted	Raster	F/00128	02048/000007
D001R005 Extracted	Raster	F/00128	02048/000012

D001R006	Raster	F/00128 02048/000013
Extracted		
D001R007	Raster	F/00128 02048/000006
Extracted		
D002R001	Raster	F/00128 02048/000015
Extracted		
D002R002	Raster	F/00128 02048/000006
Extracted		
D002R003	Raster	F/00128 02048/000007
Extracted		
D002R004	Raster	F/00128 02048/000013
Extracted		
D002R005	Raster	F/00128 02048/000006
Extracted		
D002R006	Raster	F/00128 02048/000012
Extracted		
D003R001	Raster	F/00128 02048/000058
Extracted		

Catalog Process terminated normally.

9.2 Tape Evaluation Log

Air Force CALS Test Network Tape Evaluation - Version 1.2; Release 10 (C)
   Standards referenced:
      ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
                          for Information Interchange
      ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Sat Sep 18 10:10:04 1993

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1CALS01
3

   Label Identifier: VOL1
   Volume Identifier: CALS01
   Volume Accessibility:
  ·Owner Identifier:
   Label Standard Version: 3

*** NOTE (ANSI X3.27; 8.3.1.8) - The Label Standard Version
    should be 4 to represent the current level of ANSI X3.27.

HDR1D001   CALS0100010001000100 93253 93253 000000DECFILE11A

   Label Identifier: HDR1
   File Identifier: D001
   File Set Identifier: CALS01
   File Section Number: 0001
   File Sequence Number: 0001
   Generation Number: 0001
   Generation Version Number: 00
   Creation Date: 93253
   Expiration Date: 93253
   File Accessibility:
   Block Count: 000000
   Implementation Identifier: DECFILE11A

HDR2D0204800260   00

   Label Identifier: HDR2

Recording Format: D
Block Length: 02048
Record Length: 00260
Offset Length: 00

************ Tape Mark ***************

  Actual Block Size Found = 2048 Bytes.

  Number of data blocks read = 1.

************ Tape Mark ***************

EOF1D001   CALS0100010001000100 93253 93253 000001DECFILE11A

  Label Identifier: EOF1
  File Identifier: D001
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0001
  Generation Number: 0001
  Generation Version Number: 00
  Creation Date: 93253
  Expiration Date: 93253
  File Accessibility:
  Block Count: 000001
  Implementation Identifier: DECFILE11A

EOF2D0204800260   00

  Label Identifier: EOF2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

              <<<<< *PART OF LOG FILE REMOVED HERE* >>>>>

************ Tape Mark ***************

############ End of Volume CALS01 ##############
############ End Of Tape File Set ##############

Deallocating /dev/rmt0...

Tape Import Process terminated with 0 error(s), 0 warning(s),
and 1 note(s).

9.3 Tape File Set Validation Log

Air Force CALS Test Network File Set Evaluation - Version 1.2; Release 10 (C)

  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Sat Sep 18 10:10:17 1993

MIL-STD-1840A File Set Evaluation Log

File Set: Set017

Found file: D001
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: CUBIC DEFENSE SYSTEMS INC. 9333 BALBOA AVE. SAN DIEGO, CA 92123
FSCM 94987
srcdocid: 1473045
srcrelid: NONE
chglvl: 3,3,19930308
dteisu: 19770324
dstsys: AD/YIC
dstdocid: NONE
dstrelid: NONE
dtetrn: 19930908
dlvacc: A011R, E010R
filcnt: R7
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: Document/Drawing List
docttl: ADHESIVE

Found file: D001R001
Extracting Raster Header Records...
Evaluating Raster Header Records...

MM
*** ERROR (MIL-STD-1840A; 5.1.4) - Colon missing in Raster
    header field.
*** NOTE - The header record will be given the value NONE.
*** NOTE - Correction made in new Raster Header File.

*** ERROR (MIL-STD-1840A; 5.1.4) - No field name or value given for
'dstdocid: '.

*** NOTE - The header record will be given the value NONE.
*** NOTE - Correction made in new Raster Header File.
◄ᴸ
*** ERROR (MIL-STD-1840A; 5.1.4) - Colon missing in Raster
    header field.
*** NOTE - The header record will be given the value NONE.
*** NOTE - Correction made in new Raster Header File.
♣ ΦyfèΣp4►┌◄σ£V1◄ 8-âA↵✿♣B>c<çûç╥Ö¨h#ó8↓è_4Σ.¶╟   ûC↓↔←dp╚q!Æ♠

9.4 Other Tape Reading Logs

/cals/caps/Bin/read1840A: --- Read declaration file 'D001   ' ---
/cals/caps/Bin/read1840A: --- Read declaration file 'D002   ' ---
/cals/caps/Bin/read1840A: --- Read declaration file 'D003   ' ---
/cals/caps/Bin/read1840A: file error: expected 'srcdocid...', saw 'MM'

10. Appendix D - Detailed Raster Analysis

10.1 File D003R001

10.1.1 Output HiJaak for Pro

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100.
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
3. WORKMANSHIP PER MIL-STD-454. REQUIREMENT 9.
4. BOND FIND NO. 3 IN PLACE USING FIND NO. 8 AND 9.
5. IDENTIFY AS 94987-217021-(APPLICABLE DASH NO.) AND REV LTR BY BAGGING AND TAGGING PER MIL-STD-130.
6. WITH SCREW HEAD ITEM 8 SEATED IN ITEM 5 THE BOTTOM EDGE OF ITEM 3 SHALL NOT PROTRUDE GREATER THAN .010 BELOW THE BOTTOM END OF ITEM 5. FOR -1 ONLY.
7. WITH SCREW RETRACTED, THE END OF THE SCREW, ITEM 6, SHALL NOT PROTRUDE BEYOND THE END OF ITEM 5. FOR -1 ONLY.
8. THIS DRAWING IS USED ON THE FOLLOWING CONTRACTS:
   F08635-88-C-0304
   F08635-91-C-0011
   F08626-91-C-0120

AND 9.

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPD
87	A	DCR 710126 ADDED VIEW A. ADDED NOTE 6 & 7. REMOVED .326 DIM. D. COOK 91-2-4		
	B	DCR 708676. ADDED NOTE 8 AND ITEM 16. K. BOWERS 91-4-24		
	C	DCR 702677. ADDED -2 & -3 ASSY'S. S.KAGIYAMA 91-10-10		
	D	DCR 708535 FIND NO 6 PART NO. WAS MS24693-273.FIND NO. 7 WAS MS24693-275. AND FIND NO. 11 WAS MS24693-276. K. BOWERS 91-11-12		
	E	DCR 716730. NOTE 8 WAS "SEE DWG 250230 FOR APPLCABLE CONTRACT." REMOVED FN 16. 250230. UPDATED APPLICATION BLOCK. REID PETTIT 93-02-24		

VIEW A
-1 ASSY SHOWN IN RETRACTED POSITION

PARTS LIST

	FIND NO.	PART OR IDENTIFYING NO.	SPECIFICATION	NOMENCLATURE OR DESCRIPTION	MATERIAL
	16				
REF	15		ANSI Y14.5M-1982	STD	
REF	14		DOD-STD-100	STD	
REF	13		MIL-STD-130	STD	
REF	12		MIL-STD-454	STD	
1	11	MS24693-C276		SCREW, FLH	10-32 X 1.000 LG
	10	-3		ASSY	
AR	9	GRADE A	MIL-S-22473	SEALING COMPOUND	
AR	8	GRADE T, FORM R	MIL-S-22473	PRIMER	
1	7	MS24693-C275		SCREW, FLH	10-32 X .875 LG
1	6	MS24693-C273		SCREW, FLH	10-32 X .62 LG
1	5	217024-7		SLEEVE, OUTER	
1	4	217023-7		SLEEVE, INNER	
1	3	217022-7		RING	
	2	-2		ASSY	
	1	-1		ASSY	

DO NOT SCALE DRAWING

CONTRACT NUMBER F08635-88-C-0304

CUBIC DEFENSE SYSTEMS

SCREW ASSEMBLY, CAPTIVE

SIZE D CAGE CODE 94987 DRAWING NUMBER 217021 REV E

SCALE 10/1   SHEET 1 OF 1

(1) -1 ASSY SHOWN
(2) -2 ASSY SAME AS -1 ASSY EXCEPT AS NOTED
(10) -3 ASSY SAME AS -1 ASSY EXCEPT AS NOTED

10.1.2 Output IGESView

10.1.3 Output Preview